

**AN ORNAMENTAL GOURD.**

We have already called attention to the beauty of many of the varieties of gourd, and their value in the flower garden as trellis plants. Their foliage is generally very handsome, and the fruit is frequently interesting on account of its eccentric appearance. Plants suitable for covering walls and arbors are by no means numerous; and the gourds are plants of large growth and rapid development, and are therefore worthy of cultivation. Nearly all members of the genus can be utilized for climbing purposes; and one of the best is the *cucumis metuliferus*, shown in our engraving. The venous structure of the leaf is highly organized, and the curious oblong fruit is studded all over with horny protuberances. The foliage is of a beautiful fresh green color; and if planted in a deep soil, in a sunny place sheltered from high winds, a very ornamental addition will be made to the garden. The gourds require plenty of water in dry weather, and liquid manure is highly beneficial to them.

**The Early Discovery of Coal.**

Bituminous coal, or sea coal, was known upwards of a thousand years ago, in the year 853, but did not come into general use until the 16th century, and was not used in the manufacture of iron until the 17th century. Anthracite coal came gradually into use so late as the 19th century, and was not used as fuel in the manufacture of iron until about 16 years ago.

So early as 1790 anthracite coal was known to abound in the county of Schuylkill, in the State of Pennsylvania; but it being of a different quality from that known as sea coal or bituminous coal, and being hard of ignition, it was deemed useless until the year 1795, when a Pennsylvania blacksmith, named Whetstone, brought it into notice. His success in burning it induced persons to dig for it; but when found, every person connected with the enterprise had to experiment on its combustion, and vain were the attempts to burn it by the majority of them, and all came to the conclusion that it would not come into general use.

About the year 1800, Mr. Morris, who had a large tract of land in Schuylkill county, Pennsylvania, procured a quantity of coal therefrom, and took it to Philadelphia city, but he was unable with all his heroic exertions to bring it into notice, and abandoned all his plans. From that time until 1806 it was talked about as a humbug; when accidentally a bed of coal was found in digging a tail race for a water wheel for a forge, which induced another blacksmith, David Berlin, to make a trial of it. His success was generally made known, which induced others to try to burn Pennsylvania coal.

**Study and Business.**

In learning, concentrate the energy of the mind principally on one study; the attention divided among several studies is weakened by the division; besides, it is not given to man to excel in many things. But while one study claims your main attention, make occasional excursions into the fields of literature and science, and collect materials for the improvement of your favorite pursuit.

The union of contemplative habits constructs the most useful and perfect character; contemplation gives relief to action; action gives relief to contemplation. A man unaccustomed to speculation is confined to a narrow routine of action; a man of mere speculation constructs visionary theories, which have no practical utility.

Excellence in a profession and success in business are to be obtained only by persevering industry. None who thinks himself above his vocation can succeed in it, for we cannot give our attention to what our self-importance despises. None can be eminent in his vocation who devotes his mental energy to a pursuit foreign to it, for success in what we love is failure in what we neglect.

**ACALYPHA MARGINATA.**

To the myriads of fine foliage plants which have been introduced of late years this is a welcome addition. The leaves, as regards size, resemble those of *acalypha tricolor*, but the markings, in which their chief beauty resides, are of a character wholly different from those of that variety. In the present case, the center of the leaf is brown, around which is a distinct margin of rosy carmine about a quarter of an inch in width; and the surface is entirely covered with little hairs, which add considerably to its beauty. This plant, says the *English Garden*, belongs to the spurge family, an order comprising upwards of a hundred species, which are more or less distributed over all tropical and subtropical regions, but the headquarters of which are in South America. A goodly number are annual, but the great mass are perennial plants, having much the appearance of nettles, and readily known from their nettle-like leaves and the disposition of their flowers.

INCOMBUSTIBLE lamp wicks are made in Austria of asbestos

**Railroad Crossings.**

A bill has lately been passed by the Massachusetts legislature, providing that "no highway or townway shall hereafter be laid out across a railroad at a level therewith, nor shall any railroad be laid out and constructed across a highway or townway at a level therewith, without the consent in writing of the Board of Railroad Commissioners, in addition to the authority of the Court Commissioners, as now required."

This is an excellent and most sensible measure, and one which deserves the attention of the legislatures of all the

way to cross on the same plane; and whenever such intersection does exist, guards with signals are kept constantly on the alert.

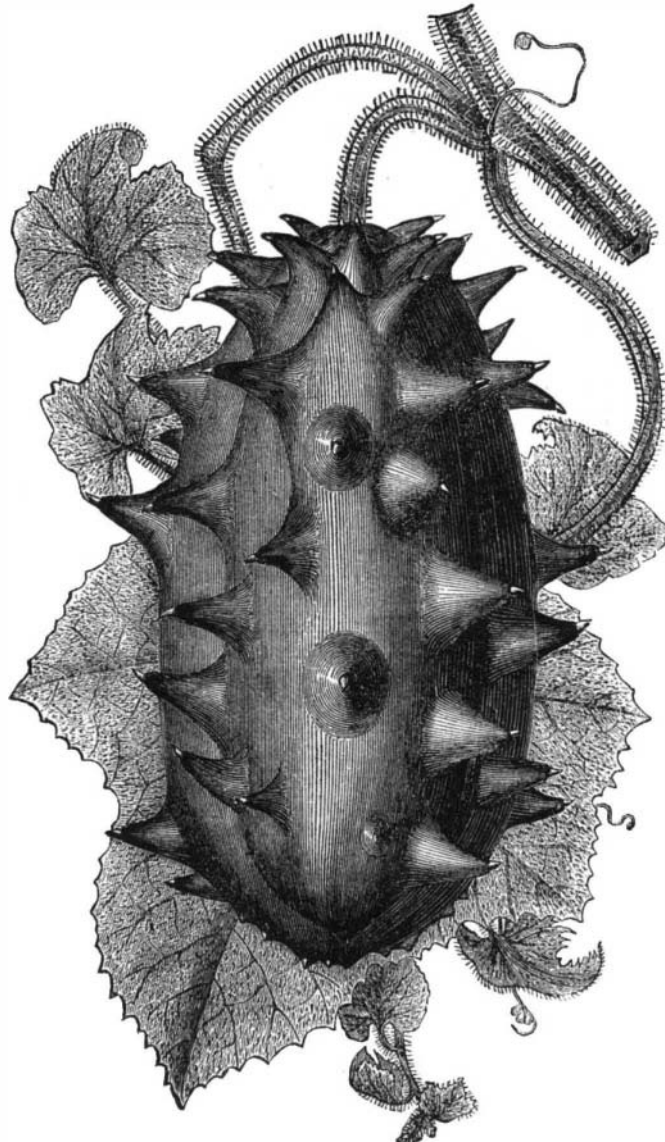
**The Thickest Armor Plate Ever Made.**

Experiment was lately made at the great works of Charles Cammell & Co., Sheffield, Eng., which, it is believed, will have an important influence upon the future of ironclad navies. It was the rolling of the thickest armor plate which has ever been produced. Four and a half inches is the thickness of the plates with which vessels of the Warrior class are covered. Step by step the size has been increased till it has reached 14 inches, which, until the present experiment, was the thickest plate known. Messrs. Cammell & Co. have now succeeded in producing one of 22 inches, this being eight inches thicker than any armor plate ever yet rolled. The plates, of which this is a sample, are intended for the Dandolo and Duilio, two war vessels now being built in Italy for the Italian government—one at their dockyard at Castellamare and the other at La Spezia. These vessels are to be armored at the water line with plates of this thickness, and the representative plate now rolled was ordered for the purpose of ascertaining the relative resistance of plates of this enormous thickness compared with the thickest that has yet been manufactured. The gun to be used in testing this great plate is one of the 100-ton guns now being made by Sir William Armstrong & Co., at Newcastle. The vessels are to have two turrets, and each turret will contain two of these enormous pieces of artillery. The guns will be about 30 feet long, their bore 19 inches in diameter, and they will throw a shot weighing nearly one ton. Several hundred pounds' weight of powder are necessary for each charge. One of the guns is nearly ready, and Sir W. Armstrong has been specially asked to make a crane, capable of lifting 150 tons, to move it. To give some idea of the enormous mass of metal of which the plate is formed, it may be stated that it had to be in the furnace upwards of twenty-seven hours before it was fit to be placed upon the rolls. It weighs upwards of 35 tons, and measures 17 feet in length and 5 feet in width. The experiment of rolling such a monster was a bold one. Sir Joseph Whitworth, Sir W. Palliser, and a number of officials and diplomatists were present to witness the operation.

Before the plate was rolled, a luncheon was served at the works, at the conclusion of which a few toasts were given and responded to. Sir Joseph Whitworth's health was proposed in connection with his guns. In giving it, Mr. Cammell stated that if Sir Joseph's guns succeeded in penetrating the plate about to be rolled, he should have no hesitation in rolling one of 30 or even 40 inches in thickness. In reply, Sir Joseph Whitworth kept significant silence with regard to what he believed his guns would do when opposed to a 22 inch plate. Sir William Palliser's health was also given. In replying, he said, that, owing to the success of his projectiles, he at first

thought that the days of iron-plated vessels were numbered, and that we should return to unplated ships with heavy guns. Subsequent experiments, however, satisfied him of the enormous resistance which armor plates presented to projectiles, unless they happened to strike exactly at right angles; and it was this enormous resistance that, in his opinion, rendered the retention of ironclad ships necessary to the country. Nobody could yet say whether the gun or the plate would win. If Sir Joseph Whitworth would penetrate even a plate 22 inches thick, then a plate must be made that it could not penetrate; in fact, the bigger the guns, the more powerful must be the plates. Nobody could deprecate more than he the idea that, because of the increase in the power of penetration of our guns, iron-plated ships must be abandoned. What they required was that their plates should be more powerful. It was only in direct firing that the greatest penetration had been obtained, and it was but fair to presume that in actual warfare the greatest portion of the shots would be fired obliquely. He was quite aware that Sir Joseph Whitworth had invented a shot which would bite when fired from an oblique position; but even then the penetration was much inferior to that obtained by a direct shot. That being so, he was inclined to think that armor-plated ships would always possess an advantage over guns.

Shortly afterwards an adjournment was made to the armor plate mills. A group of men were standing round the furnace in which the plate was being heated, and at the word of command from a superior they began to pull away the bricks at the mouth of it. Instantly the flames leaped out, and the men, accustomed as they are to stand a great heat, were constrained to retreat until the fury of the flames had subsided. Then one wearing only trousers and a shirt approached the furnace, raised a little doorway, and looked at the huge monster within. The view was doubtless satisfactory, though how any one could look into this furnace unscorched was a marvel. Men were then seen guiding, up to the mouth of the furnace, a huge pair of tongs with which the plate was to be



**CUCUMIS METULIFERUS.**

other States. While we have scores of inventions for the safety of passengers in the cars, there is little attention paid to proper safeguards to keep people out of the way of the trains. As a rule, the railroad companies are only required to put up a sign to "look out for the locomotive when the bell rings" at road crossings, and blow whistles or sound bells when the train approaches the road, and that is all that is thought needful to protect the public from trains rushing at the rate of forty miles an hour. It is no easy matter to estimate the speed of an approaching locomotive, and acci-



**ACALYPHA MARGINATA.**

dents are constantly occurring simply through people thinking that they can drive across a track before the locomotive can reach the crossing, or on attempting to cross, and failing to observe the coming train until too late to avoid it. By sinking or raising the track, so as to leave a clear passage, these accidents, of course, become impossible. In England, it is of a very unfrequent occurrence for railway and high-